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that they must all be referred to the same order and group. The new genus has a small quantity of albumen in the seed, but less than *Stephanandra*; its sepals are foliaceous and incised, more so than those of *Rhodotypos*; and it differs from all its allies in being apetalous. The full characters will be published in a memoir upon the genus.

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**Four hundred and fifty-fourth meeting.**

September 14, 1858. — MONTHLY MEETING.

Professor FELTON in the chair.

Dr. A. A. Gould communicated some general scientific intelligence collected during his recent tour in Europe.

Colonel Samuel Swett read a paper containing an account of Colonel Mason's studies in electricity in the last century.

Mr. George P. Bond gave an account of Donati's Comet, and of the observations made upon it at the Cambridge Observatory up to the present time.

Dr. C. T. Jackson made some statements respecting the invention of the magnetic telegraph, and alleged that he himself first made known to Mr. Morse the general idea of the invention, and of the principles upon which it depended.

Mr. Swett presented his views upon the protection of houses from lightning, and argued that the wet exterior of a closed house, during a thunder-storm, was an efficient protection to the interior.

Mr. George S. Boutwell gave a detailed account of the phenomena of a very severe thunder-storm to which he was exposed in the year 1855.

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**Four hundred and fifty-fifth meeting.**

October 12, 1858. — MONTHLY MEETING.

The PRESIDENT in the chair.

Professor Lovering made the following communication on Donati's Comet:—

“The polarization of light may be defined as a change in the ray,

which is not the same as change of *direction*, but which is produced whenever a ray changes its direction by reflection, or refraction, or double refraction; in consequence of which change the susceptibility of the ray to a second reflection or refraction is altered. The first reflector or refractor, by which the change is produced, is called the *polarizer*; and the second reflector or refractor, by which the change is tested, is called the *analyzer*.

“To test polarized light is, therefore, to settle the question, whether the light under consideration has been already once before reflected or refracted. In this way, the polarization of light has been or may be used to discover whether the light of comets, of the rainbow, of halos, of coronæ, of sheet-lightning (or summer lightning), of the aurora, or the zodiacal light, is reflected, as that of the planets and satellites is reflected; or whether it is self-generated on the spot.

“What I have further to say relates to the polarization of the light of comets.

“Arago undertook, in 1811, to apply to the remarkable comet of that year the no less remarkable discovery of Malus in regard to the polarization of light. Arago used the doubly refracting analyzer, and expected to discover whether or not there were sensible traces of polarization in the light of the comet, by observing whether the relative brilliancy of the two images, produced by double refraction, changed when the analyzer was revolved. He decided in the affirmative, though he felt, as he admits, less confidence in his decision, on account of the uncertainty which always adheres to comparisons of relative brightness by the eye simply. The comet of 1819 afforded another opportunity of repeating the experiment. Still Arago was not so confident in the accuracy of his results as not to desire a third trial, and in a novel way, on Halley’s comet, at its last return in 1835. On this latter occasion, Arago used a polarizer in which a doubly refracting prism is combined with a thin plate of quartz, and the two images are colored with complementary tints when polarized light is transmitted. More delicate traces of polarization, he thought, would show themselves by difference of contrasted tints in this polariscope, than by the corresponding changes of brightness in the old instrument. This last attempt left no doubt in Arago’s mind that the light of the comets was polarized, and consequently that the comets shone principally by reflected light, coming of course from the sun. This conclusion does not

exclude the possibility of other light mixed up with the polarized light, though itself unpolarized, and which is generated on the spot by changes which take place in the comet, making it to a certain extent self-luminous. The great comet of 1843, the next comer bright enough to allow of an examination into the nature of its light, was too brief a visitor, and too unfavorably situated when seen, to allow of any such observations, at least upon its nucleus. But the brilliant comet of 1858, which now distinguishes by its presence the northern sky, has lingered so long in view as to invite a renewed study into the origin of cometary light. By the invitation of Mr. G. P. Bond, I have twice visited the Observatory of Harvard College, and examined the light of this brilliant comet, when condensed in the focus of the great equatorial refractor. On the first of these occasions a Nicol's prism was used, and the changes in the brightness of the image corresponding to the rotation of the analyzer were very decided; and the positions of maxima and minima were indicated with complete unanimity in many independent experiments by Mr. Bond and myself. These experiments were made in such a way as to guard against self-delusion, — the experimenter not being able to see the position of his analyzer while he was judging of its positions of maxima and minima transmission of the light. On the second occasion, Savart's polariscope was used, in which plates of quartz and tourmaline are so combined as, with polarized light, to give colored fringes. The first glance through the polariscope at the light of the comet, condensed in the focus of the telescope, showed the field of view traversed by colored fringes, and betrayed strong traces of polarization in the light of this comet. If it is permitted to generalize from the few comets, on which experiments have been made, to comets in general, there can be no doubt that the comets, notwithstanding the almost universal absence of phase, are indebted to the sun for most, if not for all, of their light."

Dr. J. B. S. Jackson exhibited some specimens of the so-called Rocky Mountain Corn, in which each kernel has its own investing husk; this he had raised himself, and he noticed that some ears of common naked corn grew from the same seed. This has been supposed to be the original state of Indian Corn.

Professor Gray remarked that there is no evidence, and no

probability, that maize is indigenous to the Rocky Mountains, or anywhere so far north, but that it is a tropical production. He had once supposed that this form might be the original state of Corn, but he was now convinced that it was an induced or monstrous form, with a tendency to become proliferous or paniculate, instead of producing simple spikes.

Professor C. C. Felton communicated to the Academy an extended memoir by Mr. Sophocles, of Harvard University, entitled, "A Glossary of Later and Byzantine Greek."

He also gave some particulars of his recent visit to Greece, in the summer season. As to the climate, the thermometer in June did not rise above 75° F., except for two or three days toward the end of the month, when it indicated 83° and 84°, which was the highest he noticed. He had observed a remarkable progress since his first visit in 1853–54, in spite of the occupation of the country by foreign armies and the prevalence of cholera, in industrial pursuits, art, literature, and especially in education, not only in Greece proper, but wherever the Hellenic race was found in Turkey and Asia Minor.

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**Four hundred and fifty-sixth meeting.**

November 10, 1858. — STATED MEETING.

The VICE-PRESIDENT in the chair.

The Corresponding Secretary read letters from the Royal Academy of Sciences of Madrid, and the Natural History Society of Freiburg in the Briesgau. Also a letter from William Sharswood, Esq., of Philadelphia, in relation to the probable action of phosphoric acid upon non-acid calculi in the bladder.

Professor Joseph Lovering, in behalf of the committee to whom was referred the communication of Dr. I. I. Hayes, dated July 19, 1858, requesting "the counsel and the favorable influence of the Academy" in his proposed attempt to reach the north pole of the earth, read the following report:—